THE
# VETERINARY JOURNAL

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APRIL, 1923.

## Biography

### DOTT: PROFESSORE COMMENDATORE EDWARDO PERRONCITO

THE present President of the Congress of Comparative Pathology, to be held at Rome in September, and one of the best-known veterinary scientists in the world, is a man who has, by his skill and scientific work, brought honour to the veterinary profession in Italy, and Professor Perroncito is deservedly receiving honour at the hands of his colleagues on the occasion of his retirement from active life. A committee has been formed and a sum of money is being gathered together to perpetuate his memory and the work he has done, and scientists all over the world are asked to subscribe.

Born in 1847, and graduating at the University of Turin, he received his Doctorate in 1867, and the following year, in collaboration with Professor Rivolta, he published his first work on the subject of tuberculosis, and in 1878 he discovered the bacillus of fowl cholera. His researches into the value of carbon bisulphide in the treatment of bots is well known to every practitioner, and it was Perroncito who first demonstrated the positive nature of the anæmia of miners working in the St. Gothard Tunnel, thus saving many valuable human lives. Whilst holding the position of Professor of General Pathology in the High School of Veterinary Medicine in the University of Turin (of which he afterwards became Director), Dr. Perroncito inaugurated a new Chair of Parasitology in the Faculty of Medicine of the University, and it is to parasitology that he has



XUM

devoted most of his original research and upon which he is such a famous authority. His list of foreign titles and honours is almost too long to attempt, but amongst them are those of Doctor (*honoris causa*) of Victoria University and Hon. Associate of the Royal College of Veterinary Surgeons.

He is a Commander of the Crown of Italy, and France has decorated him as Chevalier of the Legion of Honour. That he may still live long to enjoy his well-earned rest is the wish sent to him from his British colleagues.

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# Editorials

## THE HISTORY OF THE PROFESSION

THE history of our profession is of interest to all veterinary readers, graduates and students alike, and we are sure that the second volume of the *History of Veterinary Literature*, the publication of which starts in this issue, will be welcomed and appreciated, especially as it comes from the able pen of such a well-known authority as Major-General Sir Frederick Smith, K.C.M.G., C.B., F.R.C.V.S. We are publishing this book in the form of a supplement in order that when all the sections have been issued they may be bound up separately for future reference. We are sure that we voice the sentiments of the whole of the profession when we record our thanks to the indefatigable author for one more of the many debts we owe to his capacity for perseverance and hard work.

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## THE CAMBRIDGE PROFESSORSHIP OF ANIMAL PATHOLOGY

A LAY reader might well be excused if, in reading a recent editorial on "Animal Pathology" in *The Times* he obtained the idea that the veterinary profession had done absolutely nothing in its own sphere for the prevention of disease amongst animals. That they have not done more is, in this country at all events, almost entirely owing to the lack of opportunity for research after obtaining the diploma; and it is indeed, as the Committee which sat to consider the question stated, a crying disgrace that the younger graduates have for so many years been so handicapped. It is to be hoped that the Director and every official on the staff of the new Institute of Animal Pathology to be established at Cambridge will be a qualified Veterinary Surgeon. That this profession has a number of names which are fully qualified to be considered for the post is shown by the fact there are 22 men holding the double medical and veterinary

qualifications, some holding a University degree in science in addition ; whilst there are 47 who possess either the M.Sc., D.Sc., or B.Sc. degree in addition to the Fellowship or Membership of the Royal College of Veterinary Surgeons. There are 269 Fellows, 43 holders of the D.V.S.M., and 28 who have taken the D.V.H.

To appoint someone whose knowledge of animals in health or disease is negligible will be a fatal mistake if the sympathy and co-operation of members of the veterinary profession is desired. One of the opportunities which the Animal Development Research Committee said was so much wanted is here now, and the profession, as a body, are certainly anxious to see some of their number permitted to grasp it. The appointment is to be made soon and for the benefit of those who are interested we publish herewith in full the details which have appeared in the January and February issues of the official University publication, the *Cambridge University Reporter* :—

REPORT OF THE COUNCIL OF THE SENATE ON THE OFFER OF THE MINISTRY OF AGRICULTURE AND FISHERIES TO ESTABLISH AN INSTITUTE OF ANIMAL PATHOLOGY.

*January* 29, 1923.

The COUNCIL OF THE SENATE beg leave to report to the Senate as follows :—

They have been informed that for a long time there has been an opinion expressed in the Departments of Medicine and Agriculture that provision should be made for the study and teaching of Animal Pathology. This opinion is strongly supported by the Regius Professor of Physic and the Drapers Professor of Agriculture.

The Council had before them at the end of the last Easter Term a statement as to the requirements for the establishment of an Institute of Animal Pathology and the necessary staff. They are now in a position to report that—

The Ministry of Agriculture and Fisheries has intimated to the Council its willingness to establish in Cambridge, in connection with the Schools of Agriculture and Medicine, a Research Institute for the study of the Pathology of Animal Diseases.

The Ministry's letter, which has the approval of the Development Commissioners and of the Treasury, offers in the first instance to provide a capital sum of £30,000 for investment by the University on the following conditions :—

(1) That the University founds a Chair of Animal Pathology, and proceeds thereafter to elect a Professor, whose tenure of office shall, in the first instance, be for five years.

XUM

(2) That out of the income of the endowment there shall be paid to the Professor of Animal Pathology such salary as the University may determine, and that the balance of the income (if any) shall be applied to expenses in connection with the Chair.

(3) That the Professor when elected shall prepare a scheme for the development, within the University, of the study of the diseases of farm animals. For the purposes of an approved scheme the Commissioners will be prepared to recommend grants from the fund provided by the Corn Production Acts (Repeal) Act, 1921.

(4) That the University be informed that the Commissioners are not in a position to recommend any assistance towards expenditure on the study of animal diseases at Cambridge from funds other than the Corn Production Acts (Repeal) Act Fund, and that when this Fund is exhausted their commitments will terminate.

With regard to condition (3), it is understood that the Ministry and the other Government Departments concerned are prepared to provide a further capital sum of about £25,000 for an extension of the School of Agriculture and further buildings of a less permanent character outside the town, sites in both cases to be provided by the University. The Ministry have orally agreed that a due proportion of this sum shall be invested to provide for the payment of rates. For the period between the inception of the Institute and March 31, 1927, the Ministry are prepared to make adequate provision in the form of annual grants for salaries of staff and maintenance. These grants for buildings, staff and maintenance will be made subject to approval of the schemes and estimates prepared by the University.

The Council are informed that the annual grant required for a thoroughly satisfactory scheme, in addition to the endowment of the Professorship and the cost of buildings, might amount to about £3,000 for staff and £10,000 for expenses.

With regard to condition (4), the Ministry points out that, while it is anticipated that the Corn Production Acts (Repeal) Act Fund will be exhausted by March 31, 1927, it is presumed that besides the "endowment" grant of £30,000 any grants to be sanctioned for building and other capital expenditure will be made before that date. The effect of the condition is, therefore, that while the Ministry will endeavour to ensure that annually recurring grants for maintenance of the proposed institute will continue beyond March 31, 1927, no guarantee to this effect can be given.

The Ministry has further informed the Council that—

The Lords Commissioners of His Majesty's Treasury have indicated that when, in 1927, or thereabouts, the Corn Repeal monies come to an end, they will be prepared to consider, with due regard to the position of the national finances and of agriculture, the provision from the Exchequer of funds to carry on schemes initiated from those monies. The present Minister of Agriculture would without hesitation place the maintenance of the Animal Pathology Institute in the forefront of the schemes for which continuing support should then be provided by the Exchequer, and he has no doubt that his successors, like the agricultural community generally, would share his view of the paramount importance of that Institute and its work. He hopes, therefore, that the risk which the University is asked to take will not appear to it unreasonable.

The Council are of opinion that the University should be protected from financial risk by the addition of a proviso that the University shall have no obligation to continue the Institute after March 31, 1927, unless satisfactory financial provision for its maintenance be forthcoming either from the Government or from other sources. In the event of the failure of financial support, the University will be left with a fully endowed Professorship of Animal Pathology, an extension of the School of Agriculture, with a sufficient endowment to pay its rates, and a range of more or less temporary buildings.

The Council are of opinion that the Pathology of Animal Diseases is a suitable subject for scientific study, and that its inclusion is desirable in the University, which already possesses strong Schools of Agriculture and Medicine.

They therefore recommend—

> That the offer of the Ministry of Agriculture and Fisheries of a sum of £30,000 to found a Professorship of Animal Pathology as a first step towards the creation of an Institute for Research in the Pathology of Animal Diseases be accepted, subject to the conditions stated in this Report.

E. C. Pearce, *Vice-Chancellor*.
T. C. Fitzpatrick.
H. K. Anderson.
P. Giles.
Arthur Gray.
Joseph Larmor.
C. E. Inglis.
E. Rutherford.
J. N. Keynes.
H. McLeod Innes.
F. J. Dykes.
F. J. M. Stratton.
Will Spens.
T. Knox-Shaw.

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REPORT OF THE COUNCIL OF THE SENATE ON A PROFESSORSHIP OF ANIMAL PATHOLOGY.

*February* 19, 1923.

The COUNCIL OF THE SENATE beg leave to report to the Senate as follows:—

They have had under consideration the Regulations for a Professorship of Animal Pathology, the establishment of which has been made possible by the offer of £30,000 from the Ministry of Agriculture and Fisheries, accepted by the Senate under Grace 3 of February 16, 1923.

They recommend—

I. That the sum of £30,000 accepted from the Ministry of Agriculture and Fisheries in accordance with Grace 3 of February 16, 1923, be separately invested.

II. That there be established in the University a Professorship of Animal Pathology, in accordance with the provisions of Statute B, Chapter VI, Section 6, and that such Professorship be subject to the following Regulations:—

1. The Professorship shall be called the Professorship of Animal Pathology.

2. It shall be the duty of the Professor to promote the study of Animal Pathology in the University by teaching and research; and to act, if required, as Director of any Institute of Animal Pathology that may be established in the University.

3. The Professor shall in the first instance be elected for five years, and shall then be eligible for re-election.

4. The election of the Professor shall be governed by Statute B, Chapter IX.

5. The residence and duties of the Professor shall be governed by Statute B, Chapter XI.

6. The Special Board to which the Professorship is assigned shall be the Special Board for Agriculture and Forestry.

7. The Professor shall receive a stipend of £1,200, paid out of the fund received from the Ministry of Agriculture and Fisheries for the foundation of a Professorship of Animal Pathology, provided that whenever the Professor shall hold a Fellowship or Headship in any College in the University, the sum of £200, or such less sum as shall be equal to the dividend received by him in respect of such

Fellowship or Headship, shall be deducted from the stipend and paid to the University Chest.

E. C. PEARCE, *Vice-Chancellor.*
T. C. FITZPATRICK.
H. K. ANDERSON.
P. GILES.
ARTHUR GRAY.
JOSEPH LARMOR.
W. R. SORLEY.
C. E. INGLIS.
E. RUTHERFORD.
J. N. KEYNES.
H. MCLEOD INNES.
F. J. DYKES.
F. J. M. STRATTON.
J. M. KEYNES.
T. KNOX-SHAW.

## General Articles

### A REPORT UPON MORE THAN TWO THOUSAND CASES OF THE VENTRICLE STRIPPING OPERATION FOR ROARING

BY FREDERICK HOBDAY, C.M.G., F.R.C.V.S., F.R.S.E.,
*Hon. Veterinary Surgeon to H.M. The King, and Examiner in Surgery to the Royal College of Veterinary Surgeons.*

IT is now some thirteen years (VETERINARY JOURNAL, 1910) since I published my first account of the Ventricle Stripping Operation for Roaring as demonstrated and described to me in 1909 by Dr. Williams, the distinguished Professor of Surgery in the Veterinary Faculty of Cornel University, U.S.A. Since that time I have been personally responsible for more than two thousand of these operations on hunters, carriage-horses, and other varieties of the equine species, and in this article I propose to put forward my opinion on its permanent value, based particularly upon the series of cases * which I have already published from time to time in sequence until the outbreak of the Great European War, which unfortunately interfered so much with the progress of scientific research.

There is no question now but that the operation has come to stay, and that its value from a working point is greatly in advance of that of the insertion of the tube.

As a proof of this we have the fact that the operation is now performed as a matter of routine in every civilised part of the world, and many reports upon its value have been given in the veterinary periodicals of Europe and America. It is especially valuable for animals of the hunter, carriage, and cart-horse class, and has found more favour with owners of these varieties than it has with the owner

* VETERINARY JOURNAL, 1910, 1911, 1913, 1914.

of the race-horse. For the latter the ordinary tracheotomy has the advantage that the horse can be operated upon to-day and raced within a few hours. With the Ventricle Stripping Operation, in order to get the best results, it is always wise to keep the patient at absolute rest for a minimum period of a month, and this would mean in the case of a race-horse that the patient would take at least five or six months before the muscles could again recover their racing tone and hard condition. With hunters, if it is done at the end of the season, it is no inconvenience whatever to the owner to allow a period of rest even for three or four months. During the interval between the hunting seasons there is ample time for a firm adhesion to take place between the vocal cord and the side of the larynx, and for the animal to become gradually exercised into hunting condition again.

With carriage and cart horses there is no reason why they should be kept at absolute rest for more than a month, provided they are put to gentle work or exercise at the end of that time and not submitted to severe exertion before the end of the eighth or ninth week.

I have read with much interest the variations which have from time to time been suggested in the technique of the operation, and have tried several of them, but experience has led me to still prefer to do the stripping of the ventricle with the finger and adhere practically to the method which has been already described in detail in the VETERINARY JOURNAL for January 1911.

I am sure it is of very great advantage to do the whole operation through the crico-thyroid ligament only, without in any way injuring the thyroid or the cricoid cartilages, and for this improvement I think I can claim to have been the pioneer ; and it is still my general practice to operate on both ventricles at the same time. The chief exceptions which I have made to this rule in the last thousand cases have been in very fat patients of the cart-horse class, as I am well aware that there is a greater risk of suffocation from œdema in operating upon the two vocal cords at the same time.

I feel sure that I can now emphasise the fact that this operation has given the profession a method by which an amelioration, sufficient to enable the horse to work without distress, can be promised in a very high percentage of cases ; and there is a prospect, in a reasonable proportion, of a cure which will even enable the animal to pass a veterinary examination for soundness of wind. This has already happened many times, and, in consequence, one of the official questions to be answered by the owner of a stallion who travels under Government auspices is as to whether the larynx has ever been operated upon. Some of the Sale Repositories also make it compulsory for the vendor to declare in the catalogue this fact in the

case of a hunter, whose throat has had this operation performed upon it, before allowing it to be entered up for sale as sound.

As I have stated before, the "useless" beast can, in a high proportion of cases, be made useful, and even if the noisy respiration does not entirely disappear, provided that the horse can work without distress, an owner is grateful.

Its success depends in a considerable measure upon the rapidity and skill with which the operation is done, and it will always, on account of its extreme delicacy, remain in the hands of the expert surgeon. The throat is such a delicate structure that it is easy to permanently disarrange matters, and the cutting of the wrong structure, or any injury to the larynx, is apt to lead to œdema, to excessive granulatory tissue, or to ossification.

Although the intervention of the Great War has made it a little difficult to trace up the original list of cases which have already appeared in sequence in the VETERINARY JOURNALS for 1911, 1913 and 1914, I have been able to trace a good proportion of them to a finish, and the result has been to emphasise the permanency of the results.

My opinion still is that it will give at least 75 per cent. of satisfactory results in hunters, and for animals which do comparatively slow work, such as carriage and cart horses, the percentage goes up to fully 90 or 95.

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## A NOTE ON THE INFECTION OF THE HUMAN BEING BY THE PARASITE OF SARCOPTIC MANGE OF THE DOG

BY ARTHUR WHITFIELD, M.D., F.R.C.P.,
*Physician to the Skin Department, King's College Hospital.*

THE fact that common sarcoptic mange of the dog is communicable to human beings by means of close and prolonged contact has been well known for a considerable time, and some years ago Professor Hobday and I published a number of cases in which this transference had occurred.

At this time, however, though I believed that I was able to make a shrewd guess at the cause of the eruption rather than a firm diagnosis, I had to confess that I had been entirely unsuccessful in my attempts to demonstrate the *Sarcoptes canis* in the skin of the human patient. As far as my knowledge of the literature goes, this has been the experience of others, and it therefore appears to me perhaps worthy of record now that I have been successful on two occasions in extracting the *Sarcoptes canis* from the skin of the human being infected from the dog.

*Case* 1.—A doctor from the country consulted me for an extremely pruritic eruption on the arms, trunk, legs, and to a slight extent on the face. The eruption was of about a fortnight's duration, and was attributed by him to a food intoxication. After careful examination of his skin, I came to the conclusion that his eruption was " mange " in the human being, and I made inquiry about a dog. He replied that he had a dog, but it did not scratch to any extent, nor did it exhibit any signs of skin disease; moreover, his wife, who was in more frequent contact than he, was not affected in any way.

With some reluctance, I therefore gave up my diagnosis and treated him for the hypothetical food intoxication with a simple antipruritic lotion as the external part of the treatment.

A week or so later I had a letter from him saying that although the lotion alleviated the itching to some degree, he was not progressing towards cure, and that his wife had become affected, and the dog was then scratching pretty vigorously.

I therefore got him to send his wife up to me accompanied by the dog.

The moment the dog entered the room I recognised it as a case of early mange, and from the back of the ear I stripped off a scale which showed four complete runs and acari under the microscope. I then turned my attention to the lady, found the usual eruption of "mange " in the human being, and after a prolonged search discovered on the front of the left wrist a short run, from which I extracted an acarus without difficulty.

This case offers two points of interest. In the first place it convinced me that I was able to diagnose " mange " in the human being correctly, at least in some cases, and was a lesson to me not to be driven off my diagnosis by conflicting history. The other point of interest was that I had found an acarus in the human being located in a run on one of the sites of predilection of human scabies.

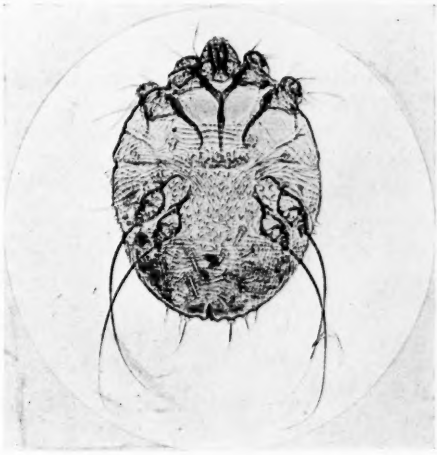
The possibility therefore occurred to me that it might have been the converse of the usual sequel of events. It appeared to be a tenable theory that the doctor had picked up ordinary scabies in the course of his practice and conveyed it to his wife and dog. This theory would account for the sequence in which the patients were alleged to be affected, and also for the fact that the acarus worked a burrow in the lady's wrist. Against it were four pieces of evidence, namely, first that in the doctor no burrows were to be found after a most careful search; secondly, that the distribution and character of his eruption were in favour of "mange " rather than of scabies ; thirdly, that in the case of the lady only one run was to be found in spite of a very profuse eruption; and, lastly, that the dog was evidently a very

favourable ground for the breeding of the acarus, and this suggested strongly that the natural habitat of the acarus was the dog rather than the human being.

On this evidence I was myself convinced that the disease was mange, but I did not publish the case as there was the faintest doubt present.

*Case* 2.—A lady was sent to me with a profuse and very pruritic eruption affecting the whole trunk and limbs, leaving the face almost entirely clear, but extending up the neck to the line of the jawbone.

Again I made the diagnosis of mange, rather more firmly than before, and on this occasion it was confirmed by the history. The



"SARCOPTES CANIS" FROM HUMAN HAIR FOLLICLE. × 140.

patient had bought a puppy from a well-known kennel, and on its arrival it was found to be scratching and to be covered with a skin eruption. A few days later both this patient and her daughter were affected, but the trouble died out almost immediately from the daughter, who had had less to do with the puppy. The puppy was submitted to a veterinary surgeon, who at once made the diagnosis of mange, and at the time the patient came to me the puppy was cured. The lady had, however, continued to suffer from the eruption, and at the time of her visit had been affected for a little more than three weeks.

No runs were found anywhere on the skin, although I made an exhaustive search, as I was encouraged by my previous experience to hope that I might repeat the extraction of the acarus.

I was on the point of giving up the search when on examining the point of the left elbow (a favourite site of the eruption in both sarcoptic infections) with a strong lens I thought I detected a brownish speck in one of the hair follicles. I therefore opened the mouth of the follicle very carefully with a pin and extracted a live acarus, which I mounted permanently, and of which I present the accompanying photomicrograph.

There is a point of slight interest in this case also, in that the disease disappeared spontaneously in the daughter in a few days. It is generally said that " mange " in the human being dies out after six weeks, even without treatment. I must confess I rather doubt the authority for this statement, as I should have thought that if the diagnosis were made efficient treatment would be used at once. Nevertheless, the fact that the undiagnosed eruption died away quickly in the daughter indicates that the human skin is at least sometimes an unfavourable ground for the *Sarcoptes canis*.

As I was unable to distinguish the acarus I had obtained from that of human scabies, by its general appearance, I extracted a couple of acari from cases of human scabies and measured these and the *Sarcoptes canis* for comparison.

The measurements proved to be as follows :—

| | | |
|---|---|---|
| *Sarcoptes hominis* :— | | |
| (1) | Extreme length . . . | 0·33 mm. |
| | Extreme width . . . | 0·306 mm. |
| (2) | Extreme length . . . | 0·35 mm. |
| | Extreme width . . . | 0·306 mm. |
| *Sarcoptes canis* :— | | |
| | Extreme length . . . | 0·288 mm. |
| | Extreme width . . . | 0·255 mm. |

The *Sarcoptes canis* is, therefore, distinctly smaller than either of the two specimens of *Sarcoptes hominis*, but, at any rate for me, is otherwise indistinguishable.

Lastly, I may add a few words in description of the eruption caused by *Sarcoptes canis* in the human being.

The distribution is somewhat similar to that of ordinary human scabies, but in the well-developed case it is considerably more profuse. In human scabies the sites of the eruption, namely, fingers, fronts of wrists, points of elbows, anterior borders of the axillæ, nipples in women, umbilicus, penis in men, skin over the tubera ischii, points of the knees, and feet, are so characteristic that it is undoubtedly possible to make the diagnosis by the distribution alone, though I do not think this should be done without attempting to find a run and an acarus, a matter of a few seconds as a rule. In " mange " the eruption affects both surfaces of the arms and legs, the trunk very profusely,

both front and back (whereas the shoulders are generally spared in the human variety), there appear to be no very special sites of predilection, and the face is frequently, though by no means invariably, affected.

As regards the individual lesions of the eruption, there is usually a large number of minute urticate erythematous papules of about the size of an ordinary pin's head. On using the watchmaker's lens it can be seen that among these there is also a number of oval erythematous lesions about an eight of an inch in length and bearing in the centre a minute thin-walled vesicle barely visible to the naked eye. This is for me the characteristic lesion, and I think now, from the experience of about fifty cases, that if one can find this one is justified in making a firm diagnosis, as there is no other disease in which I have found this lesion. To put it in familiar terms, I may describe it as like a very minute chicken-pox lesion. The seed-like vesicles so common in human scabies are rarely, if ever, present, and eczematisation and secondary pus infections, impetigo, pyogenic folliculitis, etc., are not as a rule present. Speaking generally, the eruption is far more like an exanthem than an externally produced eruption.

Three rubbings of sulphur ointment cause the rapid disappearance of all the symptoms.

In the single case that I have seen of infection from the cat in which I demonstrated the acarus from the kitten, but not from the human victim, the symptoms and course were identical with those in the cases derived from the dog.

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## DEVELOPMENTAL INTERSEXUALITY IN THE DOMESTICATED GOAT

By F. A. E. CREW, M.D., D.Sc., and ADAIR DIGHTON, F.R.C.S.
(*From the Animal Breeding Research Dept., University of Edinburgh.*)

Thanks to the kindness and interest of Mr. F. H. Stainton, F.R.C.V.S., a considerable number of cases of developmental intersexuality in the goat have been sent to this Department. The cases have much in common and differ only in the degree of the abnormality. According to the degree of imperfection of the external organs of reproduction they can be arranged in a series, at one end of which can be placed an individual which has external genitalia resembling those of a normal but immature female (specimen *A*), and at the other, one in which the external organs consist of an imperfect scrotum and an abnormally small penis (specimen *D*). Between these extremes,

cases with varying degrees of abnormality can be placed (specimens *B* and *C*).

In all cases there are found paired testes situated at some point between their primitive position near the kidneys and the skin of the scrotal region, and with a structure varying with their position ; epididymes, vasa deferentia, seminal vesicles ; bicornuate uterus and vagina, the latter attached to the dorsal wall of the urethra.

*Specimen A* (Fig. 1).—External genitalia : a vulva-like cleft with a small non-protruding phallus in its ventral commissure. Internal genitalia : intra-abdominal testes of unequal size, the right one being the larger, and having the histological structure of abdominal cryptorchids. The right epididymis well defined, but with an unusually large

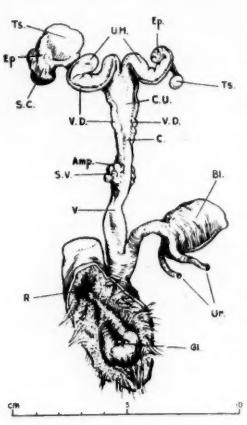


FIG. 1.

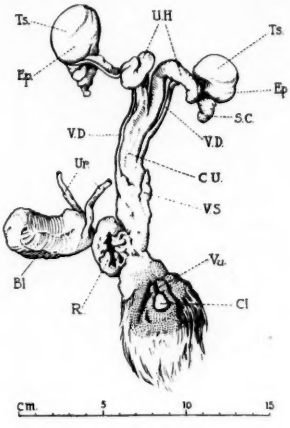


FIG. 2.

(For explanation, see end of the article.)

head and not regularly applied to the testis. That on the left was quite separate from the small testis. Uterus in mid-line : right horn flexuous and ending in region of the tail of the epididymis of that side, as did also the left horn ; but the epididymis of that side was 1·5 cm. distant from the testis. Vasa deferentia ran in the poorly developed broad ligament, to become incorporated in the ventro-lateral walls of the uterus and vagina, and to pass into the substance of the seminal vesicles. As they neared the vesicles, each vas expanded to form an ampulla, which was firmly attached to the seminal vesicle. On reaching the median border of the latter, each vas was joined by the duct of the vesicle to form the ejaculatory duct, which passed in the ventral wall of the vagina, to open into the urethra, in common with its fellow of the opposite side. The bulbo-urethral glands were

extremely poorly developed, but their ducts opening into the urogenital sinus on either side of and posterior to that of the vagina could be identified. The vaginal wall fused with that of the urethra at a point 4 cms. below the situation of the seminal vesicles, but their lumina remained distinct throughout their entire length. The extremely small vaginal orifice opened into the urogenital sinus dorsal to the external urethral orifice.

*Specimen B* (Fig. 2).—External genitalia : the protruding phallus was larger than in the previous case, but similarly imperforate. Internal genitalia : intra-abdominal testes of unequal size, the right the larger ; well-defined uterus, cervix and vagina ; well-developed

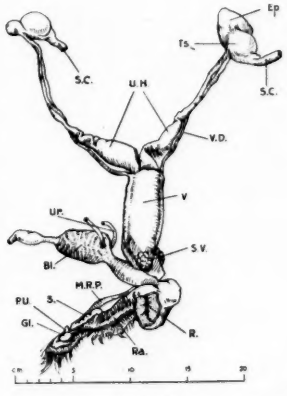


FIG 3

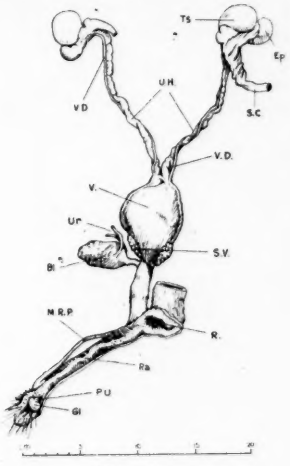


FIG 4.

(For explanation, see end of the article.)

seminal vesicles. Bulbo-urethral glands could be identified at the point of junction of urethra and vagina on the lateral aspect of the former. Urethra and vagina opened independently into urogenital sinus.

*Specimen C* (Fig. 3).—External genitalia : an ill-defined sessile scrotum in which one testis could be felt. In the mid-line of the perineum 7 cms. away from the anal orifice a uro-genital cleft with a dorsally curved phallus. Internal genitalia : testes of equal size, the right one situated in the inguinal canal. The epididymis on this side was cystic and contained a thin fluid, in which mobile spermatozoa could be identified. The vagina was distended with a fluid content similar in appearance to that in the cystic epididymis and communicated with the urethra by an extremely small aperture. Seminal

XUM

vesicles and bulbo-urethral glands well developed. Corpus cavernosum penis, 7 cms. in length, showed several flexures and was canaliculized. External urinary meatus subterminal. Retractor penis muscles well defined.

*Specimen D* (Fig. 4).—External genitalia: a scrotum more distinct than in *C*. Internal genitalia as in *C*. The corpus cavernosum penis was longer than in case *C* and presented no flexures.

Since the cases—twenty-five in all have been examined—can be arranged in a series, it is reasonable to regard each as a grade of one and the same condition, and to anticipate that all are due to the same cause. W. L. Williams, in his *Diseases of the Genital Organs of Domestic Animals*, 1921, p. 157, describes this condition in the horse, but offers no suggestion as to its significance. He remarks, however, that he has found no records of fertility in such cases. But since (1) an abdominal testis is aspermatic, and (2) the copulatory organ in these cases is abnormal either in size or constitution, it is not remarkable that these individuals, males every one of them, if a male is regarded as an individual which yields spermatozoa, are sterile.

John Hunter, and later C. J. Davies (VETERINARY JOURNAL, 1913), regarded these abnormal goats as free-martins similar to that of cattle. But Lillie (*Jour. Exp. Zool.*, 1917) has shown that for the production of a free-martin there must be a female co-twin to a male and a fusion of their chorions; neither condition is fulfilled in the case of the goat.

This type of abnormality results from the absence of that primary activation of the interstitial cells of the testes of a male which during fœtal life normally inhibits the further development of the Müllerian ducts and encourages that of the Wolffian ducts, and which models the growing urogenital sinus and genital tubercle into scrotum and penis. (Crew, *British Association Report*, 1922, Section D.)

The condition is hereditary and is genetical in origin, being due to the mating of two individuals differing one from the other in the nature of those factors which play their part in the determination of sex and in the mechanism which controls the rate of sexual development.

It is to be noted that these individuals are without exception males, and as it is the custom to kill off the excess males, the loss from this cause is not so serious.

It is very desirable that accurate records of the incidence of this abnormality should be maintained and that the relative incidence in the different breeds and herds should be recognised. The condition can be precluded through the mating of individuals whose breeding records are known.

This condition is not unknown in the human subject. (*B.M.J.*,

February 24, 1923.) There are authentic records of an individual with external genitalia of an imperfect female type having lived thoroughly as a woman for many years, and then later with the help of plastic surgery assuming the true rôle of a male. The significance of this condition could not be recognised in the case of the human: it can be recognised in the case of the goat. In matters pathological the proper study of mankind is not solely man.

EXPLANATION OF FIGURES.

| | | | |
|---|---|---|---|
| Amp. | Ampulla of vas deferens. | S. | Flexures of corpus cavernosum penis. |
| Bl. | Urinary bladder. | S.C. | Spermatic cord. |
| C.U. | Body of uterus. | S.V. | Seminal vesicle. |
| Cl. | Clitoris. | T. | Testis. |
| Ep. | Epididymis. | U.H. | Uterine horns. |
| Gl. | Glans penis. | Ur. | Ureters. |
| M.R.P. | Retractor penis. | V. | Vagina. |
| P.U. | Processus urethræ. | V.D. | Vas deferens. |
| R. | Rectum. | Vu. | Vulval cleft. |
| Ra. | Median raphe of perineum. | | |

# Clinical Articles

## THE USE OF NAPHTHALENE IN JOHNE DISEASE

BY M. E. ARMSTRONG, B.V.Sc., M.R.C.V.S., D.V.H.,
*Wigton, Cumberland.*

THE use of naphthalene dissolved in olive oil and turpentine has not previously, so far as I am aware, been recommended in the treatment of Johne disease.

During the last two years I have used the drug in all cases of the disease, and also in some cases which, although they did not display the characteristic diarrhœa, were doing badly, and becoming emaciated, although their appetites were exceptionally good and they were receiving special rations.

In this period of two years I have had three deaths from the disease. All cases died within a week from the commencement of the treatment, and were practically *in extremis* when seen.

The success following the use of naphthalene in this disease has stimulated me to recommend the use of the drug to practitioners in whose practices the disease is more prevalent than my own.

*Case* 1.—A shorthorn two-year-old heifer had been periodically scouring for about four months. She was at the time of my examination an emaciated, hidebound specimen, with a violent, gas-bubbly diarrhœa. She strained at the end of the evacuations, and occasional grinding of the teeth was noticed. The temperature

and pulse were normal. The animal had since the advent of the scouring been receiving plenty of nourishing food, which she never refused. Before the commencement of the scouring the owner had noticed the heifer was gradually losing condition and the belly was assuming a tucked up appearance. The diagnosis of Johne disease was based upon : the normal appetite, the loss of condition, and the gas bubbly diarrhœa with straining.

The treatment consisted in giving vegetable tonics, e.g. nux-vomica, quassia and gentian, and in addition the following was given in 1½ pints of new milk :—

℞

| | |
|---|---|
| Napthalene . . . . . | ʒi. |
| Ol. olivi . . . . . | ℥iss. |
| Ol. terebinth . . . . . | ʒss. |

Ft. haust.

This was given daily for fourteen days, suspended for a week, and restarted for another fourteen days. Slight improvement was first noticed in the interval between the treatments. This improvement continued, and to-day (five months after the termination of the treatment) the heifer is one of the finest on the farm. The vegetable tonics were continued for about six weeks after the naphthalene course. I may add that a fatal prognosis was given on my first visit, and I am always asked to see the heifer whenever visiting the farm.

The second case is very similar, but the same dose of naphthalene could not be tolerated, and had to be reduced. She was a roan heifer, one of six, which had previously received a dose of anti-abortion vaccine some months previous. When about three months pregnant the owner noticed her failing in condition, although she ate " all before her." I was asked to examine and see if her teeth were wrong, but I was unable to discover anything wrong with her mouth. I attributed the condition to indigestion from recent dental irregularities, and prescribed vegetable tonics combined with iron and copper. The animal was then turned out to grass with the hope of improvement. Disappointment reigned, she gradually lost flesh, became hidebound, and the gas-bubbly diarrhœa made its appearance for the first time. The appetite remained normal. The above treatment was continued with the addition of the naphthalene solution. In about a week there was complete anorexia, so the naphthalene was stopped for a few days, and then recommenced. Anorexia was soon in evidence, so I had to reduce the dose of naphthalene to gr. xx, which dose was tolerated. Improvement was gradual and continued. The heifer has since calved and is milking well, and no recurrence of the scouring has taken place.

The two previously mentioned cases are taken as examples from about fifteen animals which have received treatment, and I feel convinced that in naphthalene, which is a most powerful disinfectant, and one which is practically unchanged during its passage through the bowels, we have a valuable remedy for the treatment of this most distressing and fatal disease of cattle.

To Mr. Wm. Magnay (late chemist), of Oulton, Wigton, I am deeply indebted for having suggested the use of the drug. He is unfortunately a subject of chronic intestinal catarrh, probably of tuberculous origin, and in using naphthalene he has obtained temporary relief. He believes that if he had used this drug a few years ago his relief would have been permanent.

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## ON AN OUTBREAK OF A VARIETY OF HÆMORRHAGIC SEPTICÆMIA IN THE SHEEP (LOUPING-ILL ; TREMBLING)

By J. P. McGOWAN, M.A., M.D., B.Sc.,
*From The Rowett Institute, Aberdeen.*

In this disease, owing to the inherent difficulties of producing it artificially for experimental purposes, one has to make every possible use of outbreaks occurring naturally. Some of the difficulties alluded to may be more particularly indicated. Thus, the disease cannot be produced by inoculation, etc., in laboratories away from the locality, where it occurs naturally. It cannot even be said that, in endemic localities, the disease has ever been or can be produced at will by artificial means, because so many factors are involved in its production, which are more or less beyond control. Where the attempt has been made to imitate natural conditions of onset, one is met by some of the following hindrances. The localities are often inaccessible, facilities for carrying out such experiments are difficult to procure, the experiments are difficult and expensive to carry out, and, finally and most important, when everything has been satisfactorily arranged, the experiment may fail entirely for the following reason : The farm, chosen for the experiment because it has been badly addicted to the disease for years, may in the year of experiment be entirely free from it without apparent cause, as, indeed, often happens on such farms. In this way the experiment, after possibly laborious preparation, may be rendered futile. As a practical proposition, it is better, therefore, to wait until there occurs what one might call a " natural " experiment, that is to say an outbreak of the disease, occurring in such circumstances that the whole history, etc., of the animals is known, just as if the experiment had been planned and the happenings

purposely recorded. Such "natural" experiments come rarely to one's cognisance, for, in the first place, there is the rarity of the concomitance of circumstances favourable for such occurrences, and, in the second place, such occurrences are only rarely brought to the notice of those interested. One has been fortunate, however, in meeting with such an outbreak of the disease which would appear to throw great light on the subject and which it is proposed to describe.

The disease is known as "trembling," from a symptom exhibited very commonly by sheep affected with the disease, and also as "louping-ill," from an occurrence observable in some of the cases, where a sheep leaps suddenly into the air and falls down dead. Recognition of cases of the disease is at times somewhat difficult owing to the symptoms exhibited being equivocal, and also owing to certain hypothesis being held with regard to the production of the disease, as for instance that the disease is caused by the bites of ticks. These sources of confusion have been discussed fully elsewhere, (1) (2), and need not be further gone into here.

The outbreak of the disease, to be described here, occurred on Deeside, in a district reputed to be healthy for sheep, and where nothing like this disease had been known before. The farm on which it occurred lies at an elevation of 400 to 2,000 feet above sea-level.

The disease occurred among 220 one-year-old black-faced ewes, which had been bought in in accordance with a yearly practice on the farm. Lot 1, bought in the Auction Mart at Aberdeen on May 26th, were walked next day a distance of 26 to 27 miles to the farm. They had been wintered on a low-ground farm. It should be noted, in view of what happened later, that 40 sheep, from this same lot, were bought by another party and taken to another but less elevated part of the country. These sheep did well and never showed any sign of the disease, thereby excluding the possibility that the other sheep had the disease on them before they went to the farm. Lot 2 were purchased in Lanark and railed to Aberdeen, where they arrived on June 8th, were unloaded there and then walked 14 miles that day and 12 miles the next to the farm. On arrival they were in a very exhausted condition,* and many of them had to be carried for the last few miles. The day was very warm. They were not such a good class of sheep as Lot 1. They also had been wintered on low ground. Lot 3 were purchased in Perth, put on rail there, and arrived in Aberdeen on June 11th. They walked 14 miles that day and 12 miles the next to the farm. They were very tired and exhausted on arrival, but not

* In the United States, after long journeying in trains and droving, cattle develop what is known as "stockyard fever." This is a variety of hæmorrhagic septicæmia.

so bad as Lot 2. They had been wintered on golf links at the seaside. The fact of the sheep, which had been wintered on low ground, being taken to this elevated farm, and their exhaustion on arrival due to their experiences prior to going to market, in the market, on the train, and on their walk home, should be noted in connection with the onset of the disease.

All the lots were turned out, on arrival, on to the hill, which is a fair hill grazing similar to others in the district. This hill is common to three or four different sheep owners, whose sheep grazed indiscriminately with the new arrivals. The fact should be noted at the onset that in spite of this none of these sheep developed the disease. The farm is healthy, and the late farmer stated that he had brought similar sheep at the same time of the year on to this grazing for the last sixty years without any deaths occurring among them.

Within a day or two afterwards, the new arrivals were noticed by the shepherd to be dull, not moving to the dogs and not ranging over the pasture as normal healthy sheep, especially newcomers, should do. Nothing serious, however, was anticipated from this until, on or about June 16th, six of them were found dead, five being from Lot 1, and one from Lot 2. After this, there was a respite for a little, but from June 26th to 29th, twenty more of them died, while on July 5th the number dead from the disease had mounted to about sixty. When the disease began, deaths took place chiefly in Lots 1 and 2, but towards the end the deaths were principally in Lots 2 and 3.

The symptoms, exhibited by the early cases of the disease, were as mentioned, a dullness and a listlessness. Practically the whole of the sheep in the flock showed this. Together with this, there was fever, and the temperatures, taken on July 3rd in 186 cases, showed that 58 had a temperature of 105° and over, while in addition other 48 had a temperature of between 104° and 105°. Those slightly affected or in the early stages of the disease continued to eat, but did not wander far over the hill looking for pasture.

While the temperatures were being taken, the sheep were examined for ticks, and none were found on them. This is mentioned merely in reference to the tick theory of the causation of the disease.

The animals did not show any signs of discharge from the eyes or the nose. In serious cases, the food was often discharged through the nostrils, this being due in many cases to swelling and distension of the paunch.

No diarrhœa was observed in any of the cases; indeed, the tendency was rather the other way.

As the cases developed and became more serious, evidence was

seen of greater implication of the lungs and also of involvement of the central nervous system. Where the lung condition became aggravated, evidence of this was seen in the laboured, pumping breathing and the action of the alæ nasi, and in great weakness and tendency to lie still in one place. Many of the animals in this condition showed evidence of the " pica " already described, wandering about listlessly and aimlessly, biting through and swallowing the longer stalks of grass. The result of this was seen post-mortem, where the paunch was found distended, nearly to the point of bursting, with this material, consolidated into a doughy mass. This distension and weight must have greatly interfered with the action of the heart. The animals were affected with a great thirst, resorting frequently to the streams to drink.

In many of the more serious cases, which lived for a few days after the illness was noticeably developed, signs of affection of the nervous system were observed. After a period of dragging of the limbs, definite paralysis of them set in. A few of them were also seen to have their heads twisted to one side, owing to paralysis of the muscles on one side and uncompensated action of those on the other. A case was noted and closely followed where there was paralysis of all four limbs and loss of sensation in one of the limbs. This animal could not hold up its head and was entirely unable to stand.

In many cases, the first indication that the shepherd had of an animal not being all right was when he found it dead. In many cases he had passed them, lying and apparently ruminating, and on passing them again within an hour or so he had found them dead. He had also seen several of them jump into the air suddenly and fall down dead.

Effusion into the joint of one of the limbs and consequent lameness was observed in one case. This joint recovered after an interval and the lameness disappeared.

The evidence was all against the disease being infectious. Apart from what has already been mentioned on the subject, one of the diseased sheep was taken to the laboratory and put into a field, inadequately fenced. It escaped from this into a field with ewes and lambs and remained there a week without infecting them.

There was no evidence that poisoning by poisonous plants was to blame. Such a condition had never occurred before on this same hill, other sheep on the hill were not affected although mixing freely with them and wandering over the same ground, and examination of the stomachs of the dead sheep and of the hill itself disclosed no plants of a known poisonous nature.

With regard to the post-mortem examination of the cases dying early with the disease, little was found often except hæmorrhages in

various parts, such as the kidney, surface of the heart, skeletal muscle, etc., excess of pericardial fluid and congestion of the lungs. In cases lasting longer, these were found as before; but now the condition of the lungs had gone on to a pneumonia, in which, in a large number of cases, the consolidation of the whole lung was so profound that little air containing tissue was left. In cultures made from various sides in these lungs pure extensive uncontaminated growths of *Bacillus bipolaris septicus ovium* were obtained. The mediastinal glands were enlarged and very congested in these cases.

As regards the other organs nothing abnormal, except the hæmorrhages, was seen in any of them. The spleen was not enlarged. It was intended to examine histologically the cord and brains of those cases showing nervous symptoms, but unfortunately putrefaction was too far advanced when the carcases were examined for this to be done satisfactorily (5).

In connection with treatment, when the sheep were seen on July 5th, it was recommended that they should be moved down to a district nearer sea-level. This was done on July 7th, when they were taken to a golf course twenty-two miles down the valley and nearer the sea. Of the sheep, twelve were too ill to be removed and so were left at home. Of these a considerable number died. Of the others, one died on the way down to the new pasturage, while the rest all lived and throve. This, in spite of the fact that the sheep were dying at the rate of about four a day before removal.

From the manifestations of the outbreak, as just described, there can be no doubt that one had to do here with classical louping-ill, such as has been described as occurring in Scotland for the last century or more. The causation, immediate or more remote, as also the method of treatment and mode of prevention, is what interests us here. Ticks, as a causal factor in the disease, can be ruled out. The immediate cause of louping-ill (as of braxy [4]) would appear to be the *Bacillus bipolaris septicus ovium*, an organism comparable in its habits in sheep to the pneumococcus in human beings. These organisms are harmless inhabitants of the respiratory tract in most cases, but their morbid potentialities are set loose by secondary causes undermining the resistance of the host. These secondary causes are of many kinds, but the most potent in the case of louping-ill in sheep is their exposure, when unaccustomed to it, to great swings of temperature in a short interval of time, more especially if this happens subsequent to the exhaustion of the animal by long travelling in trains and droving. (In the case of braxy, the secondary cause is more violent in nature depending as it does on the animal swallowing rapidly a large quantity of frozen succulent food.) In both cases there is a lowering of the

vitality of the animal and a fastening on of an otherwise harmless commensal. A parallel readily suggests itself in the case of the pneumoccoccus and pneumonia.

The efficiency of a very simple means of treatment has been demonstrated. The gist of the matter, in connection with the treatment and prevention of both louping-ill and braxy, would appear to be that the dealing with the secondary factors involved in the production of the disease is simpler, more efficient, and more economical than any method based on a knowledge of the primary cause of the disease.

The points raised in this article have been discussed previously. They are recorded and emphasised here because of their demonstration practically by means of a " natural " experiment as defined above.

It is a great pleasure to acknowledge the help generously accorded by William Brown, Esq., M.R.C.V.S., and Duncan Cumming, Esq., M.R.C.V.S. They drew my attention to the cases and supplied me with the relative facts and material.

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## Abstracts of Current Literature

**Jacques, Petit, and Suzeau.—Chronic Metritis with Ovarian Cyst in the Bitch ; Hysterectomy ; Cure.**—*Recueil de Méd. Vet.*, November 30, 1922.

THE subject was a sheep dog, and for six months the bitch had been subject to a purulent vulvar discharge, and had been treated for two months with injections of permanganate of potash and bicarbonate of soda without any good result. A diagnosis of chronic metritis was made, and it was considered that hysterectomy alone would be of benefit.

The first operation of this kind in veterinary medicine (in France) was done by Liénaux in 1895, following the procedure of Porro in human medicine : total ablation of the two cornua and suture of the vaginal stump to the abdominal wall.

In 1906 Bouchet and Bergeon, and in 1913 Charmoy, recommended total hysterectomy in the bitch or cat in chronic metritis and pyometra. The operative technique as given by Coquot, Lebasque, and Mennerat

places the stump outside the peritoneal cavity (peritonisation) to avoid peritonitis, which the infecting action of the vaginal stump sometimes provokes. The bitch was prepared from the 12th to the 18th of May by being put on a diet of milk and water. The urine contained a great quantity of albumen, but no sugar.

A preliminary subcutaneous injection was given of 10 centigrammes of hydrochlorate of morphia, 5 milligrammes of neutral sulphate of atropine, and 10 c.c. of distilled water, and anæsthesia was completed fifteen minutes afterwards with chloroform. After cleansing, shaving, and disinfecting the skin, an incision was made in a straight line inside an opening in a fenestrated aseptic piece of linen placed over the abdomen.

The operation then proceeded by incision of the skin and abdominal wall, puncture of the peritoneum and incision, ligature of the arteries and uterine veins, section of the broad ligaments and the ovarian pedicles; but here a difficulty arose, the left uterine cornua showed at its anterior extremity a cystic mass as large as one's fist, which surrounded the ovary and its pedicle. The extraction of this cyst necessitated a larger opening in the abdominal cavity. At this time the patient showed slight syncope, but recovered. The vagina was then divided behind the neck between two ligatures. The stump was sutured by separated points. The next procedure was peritonisation of the stump. The stump was brought outside the abdominal cavity and was sutured with catgut, taking in with the needle the peritoneum and a little of the muscular tunic. The peritoneum was rinsed with physiological serum, the muscular wall sutured with catgut, and the skin with silk and a bandage of aseptic gauze and linen put on. Physiological serum, 100 centimetres daily, were injected subcutaneously for several days. The wound cicatrised without suppuration, but slight eventration took place on May 23rd, due to digestion of the catgut sutures taking place too quickly. The bitch eventually made a good recovery.

The following points are noteworthy :—

1. The tumour was a *cystic multilocular adenoma*, developed at the expense of the *granulosa*, and contained *colloid mucus*. Frequent in woman, this neoplasm is *very rare in the bitch*, and *difficult to diagnose clinically*.

2. *The tumoral liquid contained various microbes*, which were proved by cultivation and microscopic examination.

3. Only use catgut (preferably chromic) for the internal organs; *the muscular and cutaneous layers should always be sutured with silk.*

4. Chronic metritis can only be successfully treated surgically, and *the only surgical method is by total hysterectomy.*

**Hamoir Jos.—A Parasitic Enteritis of Cattle.**—*L'Echo Vétérinaire.*

An epizoötic enteritis of cattle arose in some animals from six to twelve months old which were in the district of a well-known practitioner, M. Rigaux, of Marche. The outbreak was characterised by loss of appetite and diarrhœa. The diarrhœa was incontrollable, and the fæcal matter, much softened, was expelled forcibly and without any effort. It exhausted the ailing ones and rapidly emaciated them. In from eight to fifteen days there was deep cachexia and death resulted. Some animals lasted from five to six weeks and a few recovered.

Two of the bullocks were sent to M. Hamoir to be under his care for observation, treatment, and investigation into the malady.

Bullock No. 1 was very thin, abdomen tucked up, ate hardly anything, and did not ruminate. Conjunctiva injected, muzzle moist, and no rise of temperature. Fæcal matter fluid, forcibly ejected, fœtid, but contained no blood. In four days condition worse, animal often recumbent and groaning; eyes sunk in the orbits; a bad prognostic sign. Death occurred next day, accompanied by collapse. M. Rigaux has excluded colchicum poisoning by a thorough search of the pasture, and he considered the complaint was of verminous origin.

Bullock No. 2 was less gravely affected. He preserved a good appetite and ruminated. Fæcal matter at the moment showed nothing abnormal.

At first we did not attempt to make any exact diagnosis by microscopical examination of the fæces, but by clinical experiences we made some interesting deductions.

We noticed first of all that the affected subjects were exclusively young beasts. This excluded a toxic enteritis, for the influence of a toxic mineral or vegetable would be evinced on animals of all ages frequenting the same pasture. It is quite otherwise as regards parasitic enteritis. We know in a general way that parasitic affections are more serious in young animals than adults. It is so notably with *coccidian enteritis*, to cite only one example. We naturally thought of this affection in these two cases, but in coccidiosis the fæcal matter is not only softened, but bloody; the enteritis is hæmorrhagic. Moreover, there is generally rectal tenesmus and fever. Nothing like this here. We can discard also *paratuberculous or hypertrophic enteritis*, which has a more chronic course, is not limited to young animals, and does not assume the character of an epizoötic.

Among parasitic maladies of cattle, accompanied by enteritis with persistent diarrhœa and leading to cachexia, we know of *gastro-intestinal strongylosis* and *intestinal œsophagostomosis*. I do not know that these

have been recorded in Belgium, but personally I have recognised the latter in some beasts sent in from Germany. I have sometimes encountered some intestinal tubercles due to œsophagostomes, but the parasite has always been discrete, well tolerated, and without any signs of enteritis. I have also observed gastric strongylosis in goats, and I have read of a gastric strongylosis caused by a little strongyle *Trichostrongylus extenuatus*, Railliet, 1898.

If we have occasion to deal with cases like these under consideration, we ought not to wait to find worms by naked-eye examination of the fæcal matter, as these are so small that they always pass unnoticed. But with the microscope, if one does not see worms, one will surely discover some eggs. All preparations made from matter derived from No. 1 bullock showed helminth eggs. These eggs are of elliptical contour, generally clear at the two poles, and the vitellus is most often plainly segmented. A first examination of the fæcal matter of No. 2 bullock showed no eggs, but in a second preparation they were formed.

Post-mortem showed no lesion and no parasites in the stomach. In the quite empty small intestine, slight congestion of the summits of the mucous folds of the ileum, ulcerations with irregular borders and yellow centres of cheesy aspect situated about Peyers' patches. Sometimes a little mucous islet in the middle of an ulcerous crater.

Numerous ulcerations in the end portion of the small intestine, mucosa intensely congested and showing petechiæ in places. Five or six pseudo tubercles size of a pea under the mucosa. Innumerable nematodes in the small intestine. They are about 1 c.m. long, like bits of cotton thread, and hardly visible to the naked eye in the mucosa in which they are enfolded. Some lesions of recent peri-intestinal peritonitis in the posterior third of the small intestine. The cœcal mucosa is congested, as also that of the colon. Numerous tricocephalæ (*T. Affinis*) easily recognisable. The enteritis was therefore parasitic and due to nematodes, and principally to a small filiform worm which Professor Gedoelst recognised as *Cooperia onchophora*, or *Strongylus oncophorus*, Railliet.

As *treatment*, keep up the animal's strength by housing and good feeding, and as remedial measures essence of chenopodium 10 to 12 grammes is indicated. Prophylactic: frequent cleansing of stall floors, lime, or sulphate of iron in solution. Keep cattle off pasture for a year, drain, lime, or apply sulphate of iron 800 kilogrammes to the hectare. Drinking out of pools must be prohibited, as also any suspect green forage.

**Ernest, L. B., and Lash, Elmer.—Tuberculin Testing of Livestock.**—*U.S. Dept. of Agriculture Circular No.* 249.

THIS is the best circular or pamphlet that we have yet seen on the use of tuberculin. It is a circular that should be in the hands of all veterinarians interested in the subject. When they have perused it they will probably know more about the technique, efficacy, and *scientific and businesslike* application of the test than ever they have done before. Would that many of our agricultural friends might also " read, mark, learn, and inwardly digest " the lessons of the pamphlet. The three official methods of tuberculin testing recognised by the Bureau of Animal Industry are :—

1. The subcutaneous or " thermal " test.
2. The intradermic or " skin " test.
3. The opthalmic or " eye " test.

The number of cattle officially tested by the various methods during a period of twenty-three months (October 1, 1920 to August 31, 1922) were : subcutaneous, 427,069 ; intradermic, 2,807,516 ; and ophthalmic, 6,509. A form of the intradermic test known as the intra-palpebral test is that in which the injection is made into the skin of the lower eyelid. Used under the proper conditions any tuberculin test properly applied is remarkably accurate. *Until March* 1, 1920, the *subcutaneous test* was the only one officially recognised by the B.A.I., but much water has flowed over Niagara falls since then, and now *the intradermic and ophthalmic tests are very largely used.* The authors state that, " more recent study and the use of other methods have shown that the subcutaneous test probably lends itself more to the assistance of those who desire to defeat its ends than does any of the other tests." The failures of the subcutaneous test may be classified under two headings : (1) Those not disclosing infected animals ; (2) classifying animals as reactors when a slight thermal disturbance may be due to other causes.

*In using the subcutaneous test on cattle which have apparently been immunised against the action of tuberculin, it should be used only with another method in combination, and larger doses of tuberculin should be employed.* Tags are largely used to identify cattle which successfully pass the test as well as any reactors that may be found. Physical disturbances which appear at the same time as thermal reactions must be noted, e.g. depression, trembling, bloat, chill, loss of appetite, suspended rumination, difficult breathing, diarrhœa, cold extremities, etc.

*The Advantages of the Subcutaneous Test* are that it entails more detailed information on the test records, necessitating the constant

attention of the veterinarian, and resulting in a very close study of the herd. It is very accurate, and lends itself readily to combination with the ophthalmic test.

*The Disadvantages.*—Not advisable in young animals with erratic temperatures, or those hard to restrain. Constant attention and physical hardship on veterinarian. It is slower and more costly than other methods.

*The Intradermic Test* has been used on by far the greater number of animals. The work has proved this method of test equally as reliable as any other method. It lends itself peculiarly to circumscribed area eradication work, permitting the testing of a larger number of cattle that would otherwise remain untested for years.

*The Advantages of the Intradermic Test.*—It facilitates work, the operator being able to test a much larger number of cattle in a given time. Animals of all ages can be tested. It lends itself readily to combination with the ophthalmic test. It pleases the livestock owner because he is not required to confine his cattle for a very long time.

Injections have to be carefully performed. A 25 to 40 minims syringe with 25 gauge Schimmel needle—half-inch extension—is used. The seat of injection is cleansed with alcohol as being non-irritant.

The animal having been restrained and the seat of injection cleaned, the veterinarian, by the most convenient method, inserts the needle between the layers of the skin, care being taken not to inject too deeply or superficially. If a half-inch needle is used, it is practicable at any time while inserting the needle to verify the accuracy of the injection by slightly lifting the needle, the outline of which will appear under the skin at the point at which the injection is made. Having inserted the full length of the needle, it is carefully drawn back approximately one-fourth of an inch, and the tuberculin inserted in the track thus established by the needle. Withdraw needle carefully and press point of injection with finger and thumb of either hand. Dose of tuberculin not to exceed 2 minims—observations should be made at 72nd hour, 120th hour and 144th hour (if appearing necessary). Animals are classified as reactors that show at the point of injection, swellings that may be either hard and circumscribed, or soft and infiltrated, with no distinct line of demarkation. Such swellings may be of various sizes, from those barely perceptible to those of a human fist.

*The Ophthalmic Test* is accomplished by means of discs, a sensitising disc being used prior to the diagnostic disc. *This test is especially valuable in those cases in which the disease has progressed to an advanced stage.*

If this test is made in conjunction with the intradermic method, the diagnostic discs are placed, preferably, on or about the seventy-second hour following the sensitising disc. If with the subcutaneous test, at the fourteenth hour or time of second post-injection temperature.

Combinations of tests, relatively new procedure, are :—

Intradermic, ophthalmic, subcutaneous.

Subcutaneous-ophthalmic.

Intradermic-ophthalmic.

Intradermic-subcutaneous.

*For purposes of economy and practicability, the combination of the intradermic and ophthalmic tests, if properly applied, is more desirable than any other. Information at hand indicates that these two tests afford an excellent check against each other, and that the results following their use are very good.*

We have reviewed this pamphlet pretty lengthily because it is of great importance and interest, but we strongly advise all practitioners interested in the subject to get the publication from the Superintendent of Documents, Government Printing Office, Washington D.C., U.S.A., enclosing value of 10 cents.

## Reviews

**Swine Practice.**—By A. T. Kinsley, M.Sc., D.V.S. Roy. 8vo., pp. 374, with 4 coloured plates and 111 figures in the text. London: Baillière, Tindall & Cox. 16s. net.

With the disappearance of the horse and the attention which is necessary to be transferred to other domesticated animals, it is not surprising that a text-book of nearly 400 pages has been written on the diseases of the pig alone, and Professor Kinsley has rendered great service to his colleagues by the complete and thorough manner in which he has dealt with his subject.

This book should be in the hands of every practitioner who has pigs in his district, for it deals not only with the medical diseases, contagious or otherwise, but also with the application of modern surgical methods to porcine practice.

The book commences with a chapter of some sixty pages on general swine management, and is immediately followed by chapters on the disorders of the digestive system, the diseases of the respiratory organs, and the urino-genital system ; whilst later on the organs of locomotion, the skin, and the circulatory and nervous systems each receive attention.

The infectious diseases, surgery, and the question of abortions and sterility, receive chapters by themselves, and are dealt with in full detail.

The plates are excellent, and are an education in themselves, both for student and practitioner. It is a book which should find its way to the bookshelf of every British veterinary surgeon.

**A Text-Book of the Diseases of the Small Domestic Animals.** By Oscar Victor Brumley, V.S., Professor of Veterinary Surgery and Director of Clinics, College of Veterinary Medicine, Ohio, State University, Columbus, Ohio. Demy 8vo., pp. xxiv + 672. Baillière, Tindall & Cox. 21s. net.

This is a text book written with discernment. It covers very effectively and concisely the big range of ailments of small animals that is met with in general practice. Casting the mind back on a large number of cases we have dealt with amongst dogs, cats, rabbits and fowls, and hunting them up in this book, we are seldom disappointed by not finding good, practical, timely advice concerning them. Where the etiology of a disease is not definitely settled, the author gives quite a neutral view of all the tenets that are held as to the causative factors.

The pathological and clinical sections in the various chapters of diseases are good, and the words on treatment well worth perusal, and the advice given practical and reliable.

Several of the prescriptions named are new to us, and one or two of our bugbears may be removed by their adoption. Thus the following mixture is recommended for *demodectic scabies* in the dog : creolin 1 ounce, phenol ½ ounce, flowers of sulphur 2 ounces, ol tereb 4 ounces, aq. ammonii 3 ounces, ol lini 20 ounces, kerosene 40 ounces ; mix and make into an emulsion and apply daily. For *canine typhus* the following is advised : ichthargan and gummi arabica of each 5 drachms, chloroform water 2 ounces ; a tablespoonful every 3 or 4 hours.

The book seems well up to date as regards its parasitology, and altogether it is a work which gives pleasure in the reading and reviewing. We notice few omissions, but in the next edition think that the author might include ptomaine poisoning, botulism, and coccidiosis of fowls and rabbits.

G. M.

## Personal

The Lieutenant-Governor is pleased to nominate the following gentlemen to be members of the Provincial Public Health Board, and they are hereby appointed to be members of the said Board for a term of two years, with effect from the date or dates on which they may take their setas on the Board: (1) Dr. A. Blake, F.R.C.V.S., D.V.H., Veterinary Officer, Rangoon Municipality ; (2) Mr. J. A. Maung Gyi, Barrister-at-Law, M.L.C. ; (3) Dr. J. B. Stephens, M.B., D.P.H., Health Officer, Rangoon Municipality.

The North of Ireland Veterinary Medical Association have recently presented an address of loyalty and welcome to His Grace the Duke of Abercorn, K.P., on his appointment as the Governor of Northern Ireland. The address, which was accepted and graciously acknowledged, was very beautifully illuminated and ornamentally engraved with figures of domesticated animals and birds, and was signed on behalf of the Association by the President (Mr. A. Ewing Johnston,

M.B.E., M.R.C.V.S.), the Treasurer (Mr. H. M'Connell, M.R.C.V.S.), and the Secretary (Mr. A. Monro, M.R.C.V.S.).

CONGRATULATIONS to Captain Bennett, M.R.C.V.S. on his skilful riding in the Grand National, which brought victory to that grand old racehorse Sergeant Murphy.

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